COMPATIBILITY DETERMINATION August 2, 2005

Yukon Delta National Wildlife Refuge

Bethel, Alaska

Use: **Reindeer Grazing**

Refuge Name: Yukon Delta National Wildlife Refuge

Establishing and Acquisition Authority(ies): Yukon Delta National Wildlife Refuge was established on December 2, 1980 when Congress passed the Alaska National Interest Lands Conservation Act (ANILCA). It includes all federal land on the Yukon-Kuskokwim Delta and incorporates the previously established Clarence Rhode National Wildlife Refuge, Hazen Bay National Wildlife Refuge, Nunivak National Wildlife Refuge.

Final Compatibility Regulations pursuant to the National Wildlife Refuge System Improvement Act of 1997 went into effect on October 18, 2000.

Refuge Purpose: Section 303(7)(B) of ANILCA sets forth purposes for which the Yukon Delta Refuge was established and shall be managed to include:

> to conserve fish and wildlife populations and habitats in their natural diversity including, but not limited to, shorebirds, seabirds, migratory birds, salmon, muskox, and marine mammals;
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> to fulfill the international treaty obligations of the United States with respect to fish and wildlife and their habitats;
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> to provide, in a manner consistent with purposes set forth in subparagraphs (i) and (ii), the opportunity for continued subsistence uses by local residents; and
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> to ensure, to the maximum extent practicable and in a manner consistent with the purposes set forth in subparagraph (i), water quality and necessary water quantity within the refuge.

In addition Section 303 (7) C states that “Subject to such reasonable regulations as the Secretary may prescribe, reindeer grazing, including necessary facilities and equipment, shall be permitted within areas where such use is, and in a manner which is, compatible with the purposes of this refuge.”

ANILCA also established two wilderness areas on Yukon Delta National Wildlife Refuge. These areas are to be managed “for the use and enjoyment of the American people in such manner as will leave them unimpaired for future use and enjoyment as wilderness, and so as to provide for the protection of these areas, the preservation of their wilderness character, and for the gathering and dissemination of information regarding their use and enjoyment as wilderness.”

Applicable Laws, Regulations and Policies: Sections of ANILCA other than those delineating the specific refuge purposes are applicable in making this compatibility determination. Section 1315(a) addresses wilderness management provisions unique to Alaska. Section 304 required that comprehensive conservation plans be prepared and revised periodically for each refuge. Each plan was required to specify the uses within each area which may be compatible with the major purposes of the refuge and set forth those opportunities which will be provided within the refuge for fish and wildlife-oriented recreation if such recreation is compatible with the purposes of each refuge. The Yukon Delta Comprehensive Conservation Plan addresses reindeer grazing in all alternatives and in all management categories. Reindeer grazing may be permitted on a site-specific basis subject to reasonable regulations and if compatible with refuge purposes. (p 27, YDNWR CCP)

Potential impacts of reindeer grazing on wilderness designation were also considered in the Comprehensive Conservation Plan. Reindeer grazing occurred on the Nunivak Wilderness when the CCP was written and continues to this day. The CCP (page 27) specifically states that “In the future, grazing may be permitted in designated wilderness on a site-specific basis subject to reasonable regulation and if compatible with refuge purposes.”

Other applicable laws, regulations, and policies include:

Laws:

National Wildlife Refuge Administration Act of 1966 (16 U.S.C.668dd-668ee);

Endangered Species Act of 1973 (16 U.S.C.1531-1544,87 stat. 884) as amended;

Refuge Recreation Act of 1962 (16 U.S.C.460k-460k-4);

Wilderness Act of 1964 (16 U.S.C.1131-1136, 78 stat. 890);

Alaska Native Claims Settlement Act of 1971;

Alaska National Interest Lands Conservation Act of 1980 (16 U.S.C.410hh-3233, 43 U.S.C. 1602-1784);

Marine Mammal Protection Act of 1972 (16 U.S.C. 1361-1407) as amended;

Archaeological Resources Protection Act of 1979 (16 U.S.C. 470aa-470ll); and

National Wildlife Refuge System Improvement Act of 1997.

Reindeer Grazing Act (25 U.S.C. 500)

Regulations:

50 CFR Subchapter C – The National Wildlife Refuge System;

50 CFR Part 36 – Alaska National Wildlife Refuges (specifically 36.31, 36.32, 36.42, and Subpart E;

43 CFR Part 36 – Transportation and Utility Systems In and Across, and Access into, Conservation System Units of Alaska;

50 CFR Part 25 – National Wildlife Refuges Administrative provisions

50 CFR Part 26 – National Wildlife Refuge System Public Entry and Use

50 CFR Part 29 – National Wildlife Refuge System Commercial Uses

50 CFR Part 35 – National Wildlife Refuge System Wilderness Management

Policies:

603 FW 2 Compatibility

5 RM 17.7 Special Use Permits

6 RM 5.5 Grasslands (grazing)

6 RM 8 Wilderness Management

6 RM 9 Grazing Management

RW-11 Compliance with ANILCA Section 810.

National Wildlife Refuge System Mission: “to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations.”

U.S. Fish and Wildlife Service Mission: “to conserve, protect, and enhance fish and wildlife and their habitats for the continuing benefit of the American people”

Description of Use: Theodore and Marie Katcheak of Stebbins, Alaska are proposing to graze 1500 reindeer on approximately 543,360 acres of Yukon Delta National Wildlife Refuge (YDNWR). The area specified in the request includes 437,120 acres of YDNWR including Native (approx. 70,400 acres) and State (approx. 1,280 acres) selected lands and 294,235 acres of the Andreafsky Wilderness Area. If a special use permit is issued, it will be for a period of five years. This compatibility determination deals only with lands administered by the US Fish and Wildlife Service. Other lands

where the Katcheak's may graze reindeer are not under our jurisdiction. The proposed area would only be used for late fall and winter grazing.

No facilities are requested on Service lands. All facilities will be built on private property.

Availability of Resources: Resources are available to manage the use as prescribed and modified in this compatibility determination. The proposal from the applicant requested a level of use where we could not assure that sufficient resources would be available to monitor the potential impacts of the number of reindeer proposed, therefore we will reduce the requested level of 1500 by 750 animals, allowing us to implement a reduced level of monitoring.

Anticipated impacts of the use:

Caribou: Caribou were historically present in large numbers in the region between Norton Sound and the lower Yukon River. Skoog (1968) summarized historical observations of caribou in western Alaska prior to the introduction of reindeer and noted that in the winter of 1866-1867 "...an enormous herd of reindeer (caribou) passed so near St. Michael that a 6-pounder loaded with buckshot was fired at them... Hundreds were killed for their skins alone...." (Nelson and True 1887, cited in Skoog 1968). Between 1877 and 1881, however, few caribou were observed, and only stragglers remained in the country between Norton Sound and the lower Yukon and Kuskokwim Rivers (Nelson and True 1887, cited in Skoog 1968). Skoog (1968) suggested that the decline of caribou in this region may have resulted from a shift in migratory patterns as large numbers of caribou remained in the Kilbuck Mountains to the south and the Kuskokwim Mountains to the southeast, and substantial numbers could still be found on the Seward Peninsula. By 1890, caribou were rare along the western coast from Bristol Bay to Point Hope, including the hills east of Norton Sound (Skoog 1968). By 1935, however, it was reported that caribou commonly migrated past St. Michael in the fall (Murie 1935).

If this use is found compatible, reindeer may come into contact with the Western Arctic Caribou Herd (WACH), which is estimated at 450,000 animals (Machida 1995a). From the mid 1980s through 1995 most of the WACH wintered in the Nulato Hills as far south as the Unalakleet River drainage. Since 1996 winter range has largely shifted to the Seward Peninsula, but the herd has also been more dispersed during winter than previously. (ADF&G. 2003. Caribou management report of survey-inventory activities 1 July 2000-30 June 2002. C. Healy, ed. Juneau, Alaska)

During the past twenty years caribou from the WACH have entered the northern portion of the YDNWR several times. About 5,000 animals were on the flats near Stebbins and St. Michael in 1985 (S. Machida, ADFG, pers. commun.). An estimated 15,000 caribou were observed in the upper Andreafsky watershed during the winter of 1993-1994 (Miller 1994). Caribou were reported to the southeast of St. Michael near the Sisters Lava Flow in winter 1995-1996 (P. Washington, St. Michael IRA, pers. commun.), but it is uncertain how many were in the area or whether they entered the refuge or the proposed grazing area.

Conjecture abounds on whether any *Rangifer tarandus* observed in this area are caribou, reindeer, or a combination of the above. In 1985 hunters from Kotlik harvested two animals marked with red ear tags. These animals originated from the NANA region. (Wolfe, 1984)

G. Walters observed (USFWS, Bethel, pers. commun.) observed 7,000-8,000 caribou approximately 12 miles (19 km) east and northeast of Unalakleet in late September and early October 1996. Some animals crossed the Unalakleet River, but most remained north of the river (J. Denton, BLM, Anchorage, pers. commun.). An unknown number of stragglers from the WACH apparently remained in the hills south of Unalakleet in the Chiroskey River drainage throughout the summer in 1996, and it is uncertain if caribou observed near Unalakleet in fall included these animals (J. Denton, pers. commun.). Lack of snow in November made it difficult to determine if significant numbers of the WACH caribou had moved west and south of Unalakleet. As of late November 1996, Ted Katcheak of Stebbins heard that caribou had moved south of Unalakleet but information was limited because of poor access to the hills (pers. commun.). A telemetry flight by USFWS and ADFG biologists on 27 November 1996 failed to detect radio collars or caribou trails on the northern YDNWR, but poor weather precluded an intensive search of the area (J. Morgart, USFWS, Bethel, pers. commun.). However, J. Austin of St. Michael reported that caribou were located south of St. Michael beginning in November 1996 and were still present in mid-January 1997; animals were observed on beaches and were accessible to hunters on 4-wheelers (pers. commun.). Caribou were also present at the old Golsovia village site during this period and were hunted by people from St. Marys in the headwaters of the Andreafsky River (J. Austin, pers. commun.). This information was verified by Harry Cheemuk of St. Michael and Morris Nashoanak of Stebbins, who reported that caribou were still near St. Michael as of 18 March 1997 and were being hunted by residents of lower Yukon River villages (pers. commun.). An Alaska Fish and Wildlife Protection Officer from Aniak had seen about 15,000-20,000 caribou in the upper Anvik River drainage in November 1996, and caribou could easily migrate to St. Michael from this area (S. Machida, ADFG, Anchorage, pers. commun.). ADFG telemetry flights were concentrated on the Seward Peninsula and did not extend to the southern Norton Sound region, but hunters reportedly shot a radio-collared caribou near St. Michael (H. Cheemuk, St. Michael, and M. Nashoanak, Stebbins, pers. commun.).

A small herd of *Rangifer tarandus* formerly occupied the Andreafsky River drainage, but biologists are uncertain whether these Andreafsky caribou were actually feral reindeer, caribou/reindeer hybrids, or a resident caribou herd that may have originated from remnants of a larger herd that historically occupied the Yukon-Kuskokwim Delta

(USFWS 1988). Residents of villages that use the southern Nulato Hills for subsistence hunting and trapping also question the origins of the Andreafsky herd. One hunter reported that both caribou and feral reindeer occurred in the mountains in separate herds, while another reported seeing a mixed herd of both caribou and reindeer (Wolfe and Pete 1984). Residents of some villages, such as Kotlik, maintain that these animals were caribou, while residents of Stebbins and St. Michael maintain they were all reindeer (J. Morgart, USFWS, Bethel, pers. commun.). Observations of caribou/reindeer in the Andreafsky drainage by YDNWR biologists have been sporadic in recent years. Refuge biologists observed 125 animals near the East Fork of the Andreafsky River in 1985, with a maximum group size of 61 animals (USFWS 1995). Calves were observed in 1987 and 1988 but not in subsequent years (Miller 1994), and few caribou were observed during surveys in 1991. Large concentrations of caribou (approximately 15,000) observed on 16 December 1993 were determined to be from the WACH due to the presence of a satellite radio collar in the group (Miller 1994). It is doubtful that a distinct, viable herd still exists in this area. The Alaska Dpeartment of Fish and Game concurs with the position that the Andreafsky herd no longer exists.

It is very difficult to predict caribou movements. Nevertheless, WACH caribou have moved into the Refuge and/or onto adjacent lands on numerous occasions during the recent past, especially during winter, and are likely to continue. This illustrates a high potential for future re-colonization of the Y-K Delta by WACH caribou. Precautions must be instituted that will prevent any management actions, including permitting reindeer grazing, that may jeopardize future movements into and the establishment of caribou within the YDNWR. A resident or semi-resident herd of caribou on the YK Delta could provide an important subsistence resource to Delta villages.

Major problems have existed where both reindeer and caribou occur. Reindeer are frequently lost to caribou herds. Subsequent interbreeding between reindeer and caribou is a concern. Competition for forage, especially on winter range can be serious. Reindeer feed much more intensively on winter range than caribou, considerably degrading range conditions and slowing lichen regeneration. The transmission of disease and parasites (warble and botflies) may pose problems. (Andreev, V.N. 1975. The state of food supply for reindeer herding and problems of the wild reindeer range use. Pp. 68-79 in E.E. Syroechkovsky (ed.) Wild northern reindeer in the USSR. Central Research Lab on Wildlife Mgmt. and Nature Preserves. Moscow; Klein, David. 1980. Conflicts between Caribou Management and Reindeer Husbandry. Alaska Cooperative Wildlife Research Unit, University of Alaska, Fairbanks).

Moose: The requested grazing allotment includes portions of GMU 18, which encompasses most of the Yukon-Kuskokwim Delta, and 22A, which includes Norton Sound drainages from, but excluding, the Pastolik River drainage to the Ungalik River drainage north of Shaktoolik. Prior to 1930 very few moose were found in Unit 22, but by the 1960s much of the suitable habitat was inhabited. Populations increased through the early 1980s and peaked at between 7,000-10,000 by the late 1980s. Since then the population has decreased to between 4,500-6,500. Severe winters (1989, 1990, and 1992) may be a cause for browse degradation. Climate change is also a factor. Climate change has caused changes in habitat use, in migration routes, and in structure and compositionof plant and animal communities. Such changes include changes in the

frequency and extent of fires. Populations in Units 22D and 22B have not recovered. ADF&G attributes this to brown bear predation on calves. ADF&G aims to maintain a population of 600-800 moose within Unit 22A, though the current population is believed to be somewhat below this target. No radio-telemetry efforts have been carried out in Unit 22A. Therefore, no data exists on movements, but local residents state that some moose that spend summer and fall within the Unalakleet River drainage spend winters in the Anvik and Yukon River drainages. (ADF&G. 2002. Moose management report of survey-inventory activities 1 July 1999-30 June 2001. C. Healy, editor. Project 1.0. Juneau, Alaska) Three moose census areas have been delineated for the Lower Yukon in GMU 18: Paimiut, St. Mary's, and Emmonak. The Lower Yukon census areas are surveyed on a biennial schedule. The most recently completed census (2002) provided an estimate of 674 $\pm$ 21.9% for the Emmonak area, 418 $\pm$ 22.4% for the St. Mary's area, and 2,382 $\pm$ 16.1% for the Paimiut area. The St. Mary's and Emmonak census areas partially overlap with the proposed grazing area.

Activities associated with reindeer grazing may disturb moose if conducted in key seasonal habitats used by moose. Problems may be exacerbated if moose density increases to the point that herders come into contact with moose more frequently than is likely under low densities. Increased hunting of moose is likely to occur within the grazing area. These problems can be mitigated by identifying important seasonal moose habitat and directing minimal herding activities in these areas.

Muskox: Fewer than 100 muskoxen inhabit mainland areas of the Yukon-Kuskokwim Delta (ADF&G. 2003. Muskox management report of survey-inventory activities 1 July 2000-30 June 2002. C. Healy, editor. Project 16.0. Juneau, Alaska). The last effort to radio-collar muskox on the Yukon-Kuskokwim Delta was in 1989 (Kacyon 1995b), however, and more recent data on population size, distribution, and movements of muskox on the mainland are needed. A viable herd does not currently inhabit the requested grazing area, but muskoxen have occurred in the Andreafsky River drainage and it is possible they may establish a herd there in the future. A small group of 5 to 7 muskoxen, primarily bulls, have been observed in the Andreafsky drainage ranging between the river mouth to Needle Mountain, but they have not been seen since 1994 (R. Kacyon, ADFG, pers. commun.). The animals probably originated from existing herds on Nelson Island or the Seward Peninsula. In 1993, several radio-collared Seward Peninsula animals moved into the northern Andreafsky and upper Pikmiktalik River drainages for a short period of time before moving back north (S. Machida, ADFG, pers. commun.). It is possible that muskoxen may eventually become permanent residents in the Andreafsky River drainage once they cross to the north side of the Yukon River in significant numbers. Muskox tend to follow drainages when dispersing, and a possible migration corridor would be from Nelson Island to the area around Chevak and Scammon Bay and up the Kashunuk River to the Yukon and Andreafsky Rivers (R. Kacyon, pers. commun.). It is also possible that more muskoxen will move south from the Seward Peninsula where there is currently a stable population of approximately 2,500 animals. Minimizing conflicts between reindeer herders and muskoxen remains a concern within Unit 22. (ADF&G. 2003. Muskox management report of survey-inventory activities 1 July 2000-30 June 2002. C. Healy, editor. Project 16.0. Juneau, Alaska).

Brown Bear: Little data is available on brown bears within the requested grazing area. Brown bear numbers are believed to have decreased during the 1900s within Unit 22 following the introduction of gold mining and reindeer herding. The population rebounded once these activities decreased during the 1940s. Census work was conducted in Units 22B, 22C, 22D, and 22E but not 22A in the early 1990s. Densities ranged from a low of 1 bear per 39 mi^2 in the southern portion of Unit 22E to a high of 1 bear per 20 mi^2 in the western portion of Unit 22B. Densities are believed to have increased during the past ten years. (ADF&G. 2003. Brown bear management report of survey-inventory activities 1 July 2000-30 June 2002. C. Healy, editor. Project 16.0. Juneau, Alaska)

Unit 18 contains a fairly good population of brown bears within the Andreafsky Mountains with an estimated 200 animals. (ADF&G. 2003. Brown bear management report of survey-inventory activities 1 July 2000-30 June 2002. C. Healy, editor. Project 16.0. Juneau, Alaska)

Historical records indicate that the Stebbins herd encountered minor problems with bear predation in the past. During fieldwork in 1995, bears were commonly observed near salmon streams and on adjacent tundra, but only 2 bears were observed in the hills during the late summer field season. No bears were seen in 1996, but a shorter field season, minimal time spent near salmon streams, and poor weather likely contributed to the absence of observations. Because only winter grazing is proposed, we anticipate minimal potential contact between bears and reindeer.

The Anchorage District BLM office has been recording opportunistic observations of bears in the Golsovia River drainage, which is just east of the requested grazing allotment, since 1989 and has been conducting surveys to assess bear abundance in the drainage since 1992. Although the Golsovia River tends to have fewer shrubs than rivers within the allotment and may differ from them in other respects, data from BLM surveys (J. Denton, BLM, unpubl. data) may provide a general idea of bear density along salmon streams in the region just south and west of Unalakleet.

BLM bear surveys were generally conducted via helicopter during the peak of the pink salmon (*Oncorhynchus gorbuscha*) run when bear densities were expected to be high. It is not known where bears disperse to when fish are not available. On 3 August 1992, a total of 14 bears (7 adults, 6 subadults, and 1 unclassified) were observed during the peak of the pink salmon run in just under an hour of flight time for an observation rate of 17.5 bears per hour. On 23 July 1994, a survey was conducted on the Golsovia River prior to the peak of the pink salmon run there but during the peak of the run on the Unalakleet River. A total of 8 bears were observed (1 female with 2 cubs, 2 subadults, 2 adults, and 1 unclassified) for an observation rate of 12.6 bears per hour. On 6 July, 1995, a survey of the Golsovia and Klikitarik Rivers was conducted to assess bear use and distribution in a non-peak year for pink salmon during a period when bears would not be concentrated near fish resources. Another purpose of this survey was to assess the presence of bears in areas included in the reindeer grazing permit request. Four bears were observed (1 female with 2 yearling cubs and 1 adult) for an observation rate of 6.8 bears per hour. On 30 July 1996, 1 sow and 2 yearling cubs were observed

during the survey. Bear activity and sightability may have been reduced by poor weather conditions during the 1996 survey (J. Denton, BLM, unpubl. data).

Additional information is needed about bear density, distribution, and food habits, particularly during the reindeer calving period, to adequately assess the potential interaction of reindeer and bears in the proposed grazing allotment. Bears will prey upon reindeer, but the predation rate will be affected by the availability of alternative food sources and the diligence of herd husbandry. Because densities of moose are low in the requested permit area, reindeer may be a particularly attractive prey species for bear (S. Machida, ADFG, Anchorage pers. commun.). Bear predation may be reduced if calving areas are established away from the hills where bears tend to den. Defense of Life and Property (DLP) mortality is not likely to increase if reindeer herding is permitted. Ten DLPs were reported within Unit 22 in 2001. Actual numbers are likely much higher – likely approaching 30 bears per year. (ADF&G. 2003. brown bear management report of survey-inventory activities 1 July 2000-30 June 2002. C. Healy, editor. Project 16.0. Juneau, Alaska).

Shorebirds and Waterfowl: The YDNWR provides important nesting, breeding, and migrating habitat for numerous bird species. The Katcheak's request is for late fall and winter grazing. There should be no impacts on shorebirds or waterfowl.

Fisheries: Three rivers in the study area are known to support anadramous fish runs of notable size: the Pikmiktalik, Kogok, and Andreafsky Rivers. ADFG periodically monitors the Pikmiktalik and Kogok Rivers, although the salmon runs in these rivers are not large enough to support extensive commercial fishing, and most of the surplus is used for subsistence. A stock assessment project was also conducted in 1982 in response to a proposal by people in Stebbins and St. Michael to establish a commercial fishery (Lean 1982). In 1994, the USFWS established a weir on the east fork of the Andreafsky River as part of a 5-year study to monitor the fishery.

Data from the Kogok and Pikmiktalik fisheries were obtained from ADFG unpublished data (F. Bue, ADFG, Nome, pers. commun), unless noted otherwise. The primary purpose of these data is to compare the relative strength of salmon runs among years rather than to estimate numbers. Aerial surveys of the rivers are not regularly conducted due to the absence of a commercial fishery, and when surveys are conducted, it is difficult to obtain accurate numbers because shrubs limit visibility of pools. The following figures are therefore approximations under optimal conditions.

Four species of salmon occur in the Kogok and Pikmiktalik Rivers; chinook (Oncorhynchus tshawytscha), chum (Oncorhynchus keta), pink, and coho (Oncorhynchus kisutch) salmon. The number of chinook salmon generally does not exceed 100 fish, and runs of pink salmon peak on even numbered years. The Kogok River is generally swampier and contains more tannins than the Pikmiktalik River, but characteristics of the drainages are becoming more similar as beaver activity increases in the Pikmiktalik. The major tributary of the Kogok River is the Nunakogok, and Lean (1982) reported that the upper limit of salmon migration was 2 mi (3 km) up the Nunakogok due to blockage by beaver dams beyond this point. Lean (1982) also found that salmon were able to migrate up to 20 mi (32 km) up the Pikmiktalik River, and good

spawning habitat occurred from 1 mi (1.6 km) above the mouth to 15 mi (24 km) upstream. Part of the Nunavulnuk River also lies within the proposed grazing area and supports salmon runs, with suitable spawning substrate in the upper portion of the river where it flows into Nunavulnuk Lake (Lean 1982).

Six thousand to 10,000 observations of pink salmon during ADFG aerial surveys of the Kogok River in a peak year is considered a large run. Approximately 1,000 chum salmon are generally observed, and 2,000 chum are considered a large run. Observations of coho salmon may reach 500 during a strong run. The Pikmiktalik River supports larger salmon runs. Up to 7,000 chums have been observed, and pink salmon may reach 15,000 during a high year. Coho counts are generally around 1,000 fish with high counts near 3,500.

Chum and pink salmon begin moving into the rivers as early as mid-June and peak around 4-10 July. Fish passage occurs through the third week of July. Coho salmon begin moving into the rivers around the fourth week of July and peak approximately the second week of August, although they may remain in the river well into September and may be present until freeze-up.

Chinook, chum, coho, pink, and sockeye (Oncorhynchus nerka) stocks also spawn in the Andreafsky River, which is considered the most important spawning area for Yukon River salmon on the refuge (USFWS 1988). The Andreafsky River is also the primary coho spawning ground for the Yukon River on the refuge (USFWS 1988), and has the highest return of pink salmon in the Yukon River drainage (Tobin and Harper 1996). A fish weir was installed in 1994 on the East Fork of the Andreafsky River approximately 27 river miles (43 km) upstream from the Yukon River. This monitoring project has annually provided reliable data necessary for managing refuge fishery resources that contribute to major Yukon River commercial and subsistence fisheries. The estimated yearly escapement of Chinook salmon passing through the weir ranged from 1,344 in 2000 to 7,974 in 2004 and averaged 4,492. The median passage date ranges from 6 July in 2004 to 15 July in 1997 with the average date being 9 July. The estimated yearly escapement of chum salmon passing through the weir ranged from 21,918 in 2000 to 200,981 in 1994 and averaged 78,399. The median passage date ranges from 3 July in 2002 and 2004 to 9 July in 1997 and 2003 with the average date being 6 July. The estimated yearly escapement of coho salmon passing through the weir ranged from 2,963 in 1999 to 13,650 in 2001 and averaged 8,147. The median passage date ranges from 26 August in 1996 to 7 September in 2002 with the average date being 31 August. The estimated yearly escapement of pink salmon passing through the weir ranged from 37,069 in 2000 to 399, 102 in 2004 and averaged 193,327 for even year stocks, and 429 in 1997 to 4,303 in 2003 and averaged 1,051 for odd year stocks. Some pink salmon were able to pass uncounted between weir panel pickets so escapement is higher than indicated. The estimated yearly escapement of sockeye salmon passing through the weir ranged from 15 in 2001 to 508 in 2004 and averaged 87. Other species counted as having passed through the weir include Arctic grayling (Thymallus arcticus), Dolly Varden (Salvelinus malma), northern pike (Esox lucius), suckers (Catostomus catostomus), and whitefish (Prosopium cylindraceum and Coregonus spp.). Similar data for the main fork of the Andreafsky River are unavailable. (Data provided by Charles Gewin, USFWS, Fairbanks, AK, personal communication.)

Much of the Pacific salmon subsistence harvest of the communities of Stebbins and St. Michael occurs on Pikmiktalik River, which lies within the Yukon Delta National Wildlife Refuge. This fishery is one of the few managed under Federal subsistence authority within the Seward Peninsula Region, and prior to the start of this project daily and annual spawning escapement estimates were unavailable. In 2003, Kawerak, Inc., in cooperation with Stebbins and St Michael IRAs, began collecting information on salmon abundance and run-timing, as well as age, sex, and length, with funding from the Federal Office of Subsistence Management's Fisheries Resource Monitoring Program. Information is provided to Federal and State managers as well as the general public. A tower, partial diversion weir, and flash panel (placed on the river bottom to provide contrast) are used to count salmon. Counting is conducted 20 minutes each hour, and occurs 24 hours, a day, 7 days per week. Counts are expanded to obtain total hourly, daily, and annual estimates. In 2003, total estimated escapements were 345 Chinook *Oncorhynchus tshawytscha,* 7,707 chum *0. keta,* 13,165 pink *0. gorbuscha,* and 87 coho *0. kisutch* salmon. In 2004 total estimated escapements were 225 Chinook, *8,051* chum, *50,621* pink and 11,799 coho salmon. Several hundred Dolly Varden *Salvelinus malma* and 915 whitefish *Coregonus sp.* also passed the site each year. To obtain biological information, salmon were captured with a beach seine. A stratified sampling design was used, and sample sizes was selected so that simultaneous 95% confidence interval estimates of age composition proportions would be no wider than 0.20. For chum salmon, 4 year olds dominated the 2003 sample (82.8%), while 4 (40%) and 5 (48%) years olds were about equally represented in the 2004 sample. In both years, chum salmon male to female ratio was about 50:50, and chum salmon average length was similar (576 mm, 2003; 572 mm, 2004). This project is developing the capacity of rural residents to assist in managing local fishery resources. (*Pikmiktalik River Pacific salmon escapement enumeration*,Timothy J. Kroeker and Karen Dunmall, 2004)

Reindeer grazing will likely have little impact on fisheries, although there is potential for some sedimentation of salmon streams

Habitat: Based on the low levels of lichen use and high estimates of lichen biomass, winter range on the requested grazing area is considered in excellent condition. The stocking rate was determined assuming a daily forage intake/reindeer/day of 5.45 lbs (NRCS 1987), a 180 day winter grazing season, and reindeer exclusion from winter range in summer. Similar to other deer species, reindeer is a selective generalist. A great number of plant species are potential food sources, but many studies have shown a selection among the species resulting in pronounced preferences and avoidances.. Forage conditions should be able to accommodate this use without degrading the resource (Saperstein, page 29 for details). Water is abundant and available across the requested grazing area, and reindeer unless forced, do not generally confine watering to point sources. This dispersed use should have minimal impact to silt loads in streams and rivers.

Some research has shown that foraging behavior in winter ranges with snow will tend to increase spatial heterogeneity and thus plant diversity (Moen and Olofsson, 2002)

Public review and comment: The period of public review and comment was open from June 30, 2005 to July 29, 2005. Comments were received from three parties and

individual responses were provided to each party regarding their comments. Comments are summarized in a “Response to Comments” document (attached)

Special Conditions / Stipulations Necessary to Ensure Compatibility:

A grazing management plan must be developed in coordination with the Natural Resources Conservation Service (NRCS) – the agency that provides technical assistance to Alaska Natives for reindeer grazing. This plan must be submitted and approved by the Refuge Manager prior to issuance of any permit. The grazing management plan must include the following conditions:

Animals excess to subsistence needs must be culled from the herd annually to keep the herd below target levels. Excess animals or products may be sold.

A monitoring system to ensure habitat is not degraded or the natural diversity impacted. Permanent transects will be established to monitor vegetation as soon as possible once grazing begins. All costs associated with monitoring are the responsibility of the permittee.

A description of management controls for herd movement.

A description of animal husbandry practices (sex ratios, castration timing)

Compliance and documentation controls.

Clear identification of reindeer through use of marking system (ear tags).

Stocking Rate on the permit will reflect total reindeer on the range regardless of ownership. If the Katcheak and Stebbins/St. Michael IRA herds intermingle and are jointly managed, stocking rate will apply to the total number of reindeer.

All terrain vehicles and snowmobiles are only permitted when sufficient snow cover exists to protect underlying habitat.

The presence of grazing reindeer will not impact the decisions made on the management of fires within the permit area. (e.g. No fires will be suppressed in limited suppression areas solely to protect reindeer forage.)

The presence of grazing reindeer will not impact management decisions regarding other subsistence use within the permitted area. (e.g. No restrictions on hunting because of reindeer.)

The permitted operations will be conducted in accordance with State and Federal law with regard to predators, other wildlife, and Defense of Life and Property.

Annual reports on numbers of animals and areas used. Grazing areas used will be rotated in order to preclude any over use. These areas must be negotiated annually with the Refuge Manager prior to reindeer entering the Refuge.

Justification: The justification for this compatibility decision is based in ANILCA. Section 303(7)(B) of ANILCA sets forth purposes for which the Yukon Delta Refuge was established. (See Page 1)

In addition Section 303 (7) C states that "Subject to such reasonable regulations as the Secretary may prescribe, reindeer grazing, including necessary facilities and equipment, shall be permitted within areas where such use is, and in a manner which is, compatible with the purposes of this refuge."

It is interesting to note that in early versions of the ANILCA legislation, this provision was listed as a purpose and the sentence ended with "compatible with the *major* purposes of this refuge" which were listed directly above it in the text. In our review of the Congressional Record, it is clear that the intent was to consider reindeer grazing predominately a subsistence activity and protect the potential for future opportunities to establish herds of reindeer that would use the refuge. Title 25 U.S.C., Chapter 14, subchapter VII section 500,(which addresses the industry states that "A necessity for providing means of subsistence for the Eskimos and other natives of Alaska is hereby declared to exists." This could be interpreted to mean that all reindeer grazing is considered subsistence activities.

The next thing to consider is whether or not this is a subsistence use. In recent history (20 years), there has not been a commercial sale of reindeer out of the Stebbins St. Michael area (M. Rearden, pers comm.). Mr. Katcheak does not currently own the number of reindeer he has requested in this permit, he plans to build toward it. The Reindeer Grazing Act (USC 25 sec 500) considers all reindeer grazing as providing for subsistence of Eskimos and Alaska natives.

This activity should have minimal impact on other subsistence activities. Reindeer grazing will be occurring during seasons when fishing should be minimal and berrypicking is not occurring. The only potential conflict that could occur is if caribou from the WACH come in to the area. Some reindeer may be taken mistakenly by caribou hunters, however the grazing should not have a negative impact on hunting.

ANILCA states that "reindeer grazing shall" rather than "reindeer grazing may" be permitted. That makes the statement direction rather than a recommendation. While not set aside as a purpose, it is clear direction to allow reindeer grazing in areas and in ways which are compatible with the purposes of the refuge. If reindeer grazing, as proposed, does not "materially detract" from the purposes for which the refuge was established, it must be permitted. We also interpret this to modify certain sections of CFR 50. CFR 50.36.1 (a) states that "The regulations contained in this part are prescribed for the proper use and management of all Alaska National Wildlife Refuges and supplement the general National Wildlife Refuge System regulations found in title 50 CFR Chapter I, subchapter C. The general National Wildlife Refuge System regulations are automatically applicable in their entirety to Alaska National Wildlife

Refuges except as supplemented or modified by these regulations or ANILCA. (emphasis added)

Depending on whether or not this is considered a commercial use we should consider that section 303 (7) c of ANILCA does modify CFR 50.29.1 which states “We may only authorize public or private economic use of the natural resources of any National Wildlife Refuge in accordance with 16 U.S.C. 715s, where we determine that the use contributes to the achievement of national wildlife refuge purposes or the National Wildlife Refuge System mission.” Section 303 (7)c of ANILCA, because of the clear intent of its direction, preempts this requirement.

The Saperstein study clearly shows that the habitat available could support 1500 animals (which was the number in Katcheak’s request) and not degrade the habitats on which wildlife species depend. The decision has been made to permit 50% of the request in order to reduce the need for intense monitoring. There should be no impact on the other refuge purposes listed in ANILCA.

Existing Service policy on Wilderness Management does not preclude grazing in Wilderness areas where the use was established prior to establishment of the area.

Reindeer were present on the northern Yukon Delta as early as 1897 when 100 reindeer from the Seward Peninsula were shipped to St. Michael to be sent up the Yukon River to Circle City to feed starving miners (Stern 1980). Instead of going to Circle City, these reindeer were shipped to Point Barrow, along with additional reindeer from the Seward Peninsula, to feed overwintering whalers reportedly in danger of starving (Stern 1980). It did not appear that any reindeer remained in St. Michael at this time. Reindeer were established east of St. Michael in Golsovia as early as 1907 (Stern 1980), but information beyond that point is unavailable. From around 1910 to the early 1940's, Mary Antisarlook (Sinrok Mary) used a reindeer corral at Klikitarik (BIA 1983) on the Norton Sound coast about 21 mi (34 km) south and east of St. Michael and 7 mi (11 km) north of the requested permit area’s northeastern boundary. It is reported that up to 10,000 reindeer were counted in the corral at one time (BIA 1983). Some of the reindeer were eventually sold to Frank Williams, who moved his reindeer to Pikmiktalik and started the Stebbins herd (BIA 1983). A U.S. Reindeer Service map dated 1941 indicated that the St. Michael-Unalakleet range was bounded by the upper Pikmiktalik River to the southwest, the upper Klikitarik River to the northwest, the upper Anvik River to the northeast, and the upper Bonasila River to the southeast. No information was available about which herds utilized this range. A government herd from Egavik was transferred to St. Michael after losses to wolves in 1948 and a Hooper Bay herd, also suffering losses to wolves, was transferred to St. Michael in 1950 (BIA data cited in Stern 1980).

Reports indicate that some form of the Stebbins/St. Michael IRA herd has been in existence since 1940 (Rouse et al. 1948, cited in Stern 1980), if not earlier. For at least part, if not all, of this time, the herd utilized the area between Stebbins and the Pikmiktalik River, including north-facing slopes of the southwestern Nulato Hills (Wolfe and Pete 1984, T. Katcheak, Stebbins, pers. commun.). A copy of a 1948 U.S. Fish and Wildlife Service (USFWS) and Alaska Native Service reindeer report indicated that

a herd of 400 reindeer managed by both government and private operators was based in Stebbins/St. Michael, and the herd had been in existence for 8 years (Rouse et al. 1948, cited in Stern 1980). A 1958 copy of a BIA annual extension report, also in Stern (1980), listed the herd headquarters as Stebbins, the operator as Stebbins Community Association, and the estimated herd size as 2,700 reindeer. It is possible that herd size was high due to the previously mentioned transfers of reindeer from Egavik and Hooper Bay. At this time, herd size was large enough that the BIA attempted to reclaim 2,200 animals loaned to Stebbins. Several attempts were made to herd the animals to Andreafsky or Kotlik, but these drives were unsuccessful and animals either migrated back to Stebbins or dispersed. By 1968, the Stebbins herd had declined to 600 animals (BIA extension report cited in Stern 1980).

Estimates of herd size in the 1950's and 1960's varied among people living in Stebbins and St. Michael during that period. Ben Katcheak of Stebbins estimated that about 10,000 reindeer occupied the area south of Stebbins and St. Michael in the mid 1950's (pers. commun.), and animals were rotated among seasonal ranges to prevent overgrazing. The exact locations of these ranges were not specified. In the 1960's, grazing extended to the Golsovia River to the north, Needle Mountain to the southeast, and Coffee Point to the southwest (T. Katcheak, Stebbins, pers. commun. cited in Wolfe and Pete 1984). George Walters owned the only airplane in St. Michael between 1963-1973, and based on his flights throughout the region he estimated there were about 20,000 reindeer on the northern Yukon Delta in 1963 (USFWS, Bethel, pers. commun.). He recalled butchering operations at Hogback, just east of Kotlik, as well as at a camp on the Pikmiktalik River and on canals near St. Michael. According to Walters, reindeer occurred near the headwaters of the Andreafsky River (west fork) and Needle Mountain. He also saw reindeer at Bonasila Dome, northwest of Holy Cross, and remembers that numerous wolves were present in the area.

Ted Katcheak believed that the Stebbins reindeer herd numbered only about 500-600 head by 1963, and slaughtering kept the herd size stable (pers. commun.). Information from BLM files indicated that a large decline in herd size probably occurred between1963 to 1965. A grazing operations report from Stebbins estimated herd size at the beginning of 1963 at 2,854 reindeer but by the end of 1965 herd size was down to 400 animals after 600 had been slaughtered. Katcheak also reported that the Hogback corral was used from the early 1950's to 1959 (T. Katcheak, pers. commun.). He recalled that herders used to travel as far as the headwaters of the Atchuelinguk River, which lies east of the East Fork of the Andreafsky River and drains into the Yukon River at Pilot Station. He suggested that high estimates of reindeer numbers in the early 1960s may be due to the presence of caribou in the area. Skoog (1968) estimated that the caribou herd inhabiting northwestern Alaska numbered 300,000 in 1964, based on previous data and the magnitude of hunting mortality by village residents, and stated that movements of the herd had become erratic and widespread.

By 1977 neither Stebbins nor St. Michael were listed on the BIA annual summary of reindeer herding operations, although the summary did not list all herds in Alaska (Stern 1980). BLM files indicated that 150-200 animals were observed by BLM personnel in 1976, and the herd numbered about 379 reindeer at the end of 1977 (Appendix 8). The Stebbins IRA Council requested the loan of 800 reindeer from the BIA in 1982 because

the existing herd was not large enough to meet the needs of the community (Stebbins IRA Council Resolution 82-02). The BIA responded that they did not have reindeer available at that time, although reindeer loans were due to be paid back by 2 herders (BIA letter by G. Walters [not the previously mentioned G. Walters] 1982). Ted Katcheak was able to obtain some reindeer for the IRA from the Sagoonik herd in Shaktoolik and drove them to Stebbins via Unalakleet in 1982 and 1983 (T. Katcheak, Stebbins, pers. commun.).

Prior to the establishment of the YDNWR by ANILCA, BLM was responsible for management of reindeer grazing permits in the northern Yukon Delta and Unalakleet areas. Files dated prior to 1962 were removed from the BLM archives and destroyed (J. Denton, BLM, Anchorage, pers. commun.). Additional BIA files may have existed at one time, but many BIA records of reindeer grazing prior to 1982 were destroyed in a fire (D. Tomlin, BIA, Anchorage, pers. commun.).

The following information is excerpted from a summary of BLM archival files provided by J. Denton, BLM Anchorage District (Appendix 8). A reindeer grazing permit was issued to the Stebbins IRA by BLM from 1962-1972: a map of the permit area indicated that much of the area currently requested was included in the old permit, except for the Andreafsky River drainage. Portions of what eventually became the Andreafsky Wilderness were also included in the old permit. A permit apparently existed prior to 1962, but it is not known who managed reindeer grazing permits at that time. The permit was not renewed between1972-1976 despite the presence of reindeer on BLM land, but after 1974 BLM did not pursue renewal by the applicant because much of the grazed lands were selected by Native corporations and conveyance was expected in the near future. In 1978, BLM received a permit application and fee from Stebbins to graze 400 reindeer in the area specified in the original 1962 permit. The application and fee were returned by BLM because changing land status was expected to remove much of the requested grazing land from BLM's management. BLM also told the applicant that after conveyance and settlement of land management boundaries, they would discuss new permits for grazing on land retained by BLM. No further applications were filed with any agencies until the current application, even though reindeer in the Stebbins/St. Michael herd occasionally grazed on BLM and USFWS land.

The requested grazing area includes approximately 294,000 acres of the 1.3 million acre Andreafsky Wilderness created by ANILCA. Section 707 of ANILCA states that "except as otherwise expressly provided for in this Act wilderness designated by this Act shall be administered in accordance with applicable provisions of the Wilderness Act governing areas designated by that Act as wilderness..." Exceptions to the Wilderness Act (P.L88-577) expressly allowed in Alaska by ANILCA include motorized access for traditional and subsistence purposes, modification of fish habitat and establishment of hatchery programs, construction of a limited number of new structures for public use and safety, cutting of trees for house logs and firewood, and salvage of beach logs. Section 6 of the USFWS Refuge Manual (RM 8.8G, Release 014, 1986) states that "the Wilderness Act does not prohibit livestock grazing in a refuge wilderness area where it has been an established activity prior to designation of an area as wilderness." Grazing in wilderness must be in compliance with USFWS grazing policy designed for grasslands (USFWS Refuge Manual, Sect. 8.8G, 1986), which requires evaluation of

soils, range (ecological) sites, and range condition (USFWS Refuge Manual Sect. 6, RM 5.5A, Release 003, 1982).

As mentioned earlier, a grazing permit issued by the BLM was in effect from 1962-1972 in areas that later became part of the Andreafsky Wilderness under ANILCA. This permit establishes that reindeer legally grazed in portions of the Andreafsky Wilderness prior to wilderness designation.

Refuge Determination:

This use is compatible X

This use is not compatible

Approval: _____ 8/02/05

Project Leader Date

Concurrence: Mike Boylan (Acting) 8/24/05

Regional Chief, National Wildlife Refuge System – AK Date

Mandatory Re-Evaluation Date: This use must be reviewed ten years from the date of completion of this Compatibility Determination unless the use changes significantly, significant new information is made available that could affect the compatibility determination, or if requested by the permit holder.

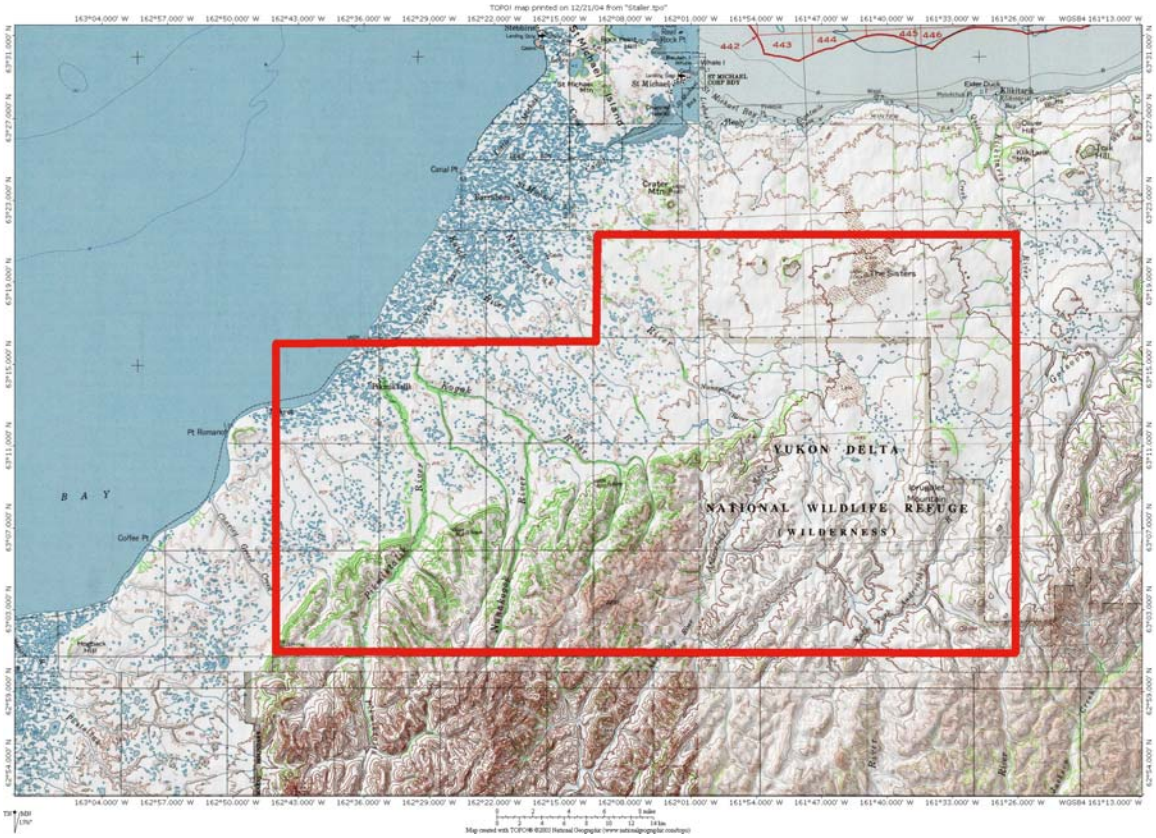
Citations

Reindeer Grazing on the northern Yukon Delta National Wildlife Refuge, Alaska: Range evaluation and compatibility issues", Saperstein, Lisa, 1997

Reindeer grazing patterns on various scales Moen and Olofsson, Roger 2002

Use of Caribou and Reindeer in the Andreafsky Mountains. Wolfe, Robert and Pete Mary, 1984 Alaska Dept of Fish and Game Technical Paper 98

Andreafsky River, A Wild and Scenic River Analysis Bureau of Outdoor Recreation Report, 1971



Proposed Reindeer Grazing area.

Draft Grazing Plan for Katcheak Herd

Proposed grazing area includes 543,360 acres

Timing of Grazing November 1 through April 30 annually

This will be open range grazing
Herd size: 750

Selected Reindeer Life History
Early in the Winter season, reindeer will look for any remainders of open vegetation. They will use these areas as long as snow depths are less than 30 centimeters and before temperatures get severely cold. At this time calves typically weigh between 30-50 kilograms and full grown cows between 60-90 kilograms.

Stocking rate provides 375 acres per animal when the entire 543,360 acres are included, and 216 acres per animal when only the estimated 312,762 acres of winter range are considered. Please see carrying capacity table below for comparison.

Forage intake estimate is 5.45 lbs per day per animal. (NRCS, 1987)

Conditions:

Permittee must submit annual reports on number of animals and areas utilized by September 1 each year. The report must include a proposal identifying areas to be used during the following year, subject to approval by the Refuge Manager. Areas utilized will be negotiated annually with the Refuge Manager in order to assure there is no crowding and overuse.

Reindeer will be kept off the winter range in summer because lichens are dry and brittle and easily destroyed.

Animals must be ear tagged.

No structures are permitted.

Permittee must comply with State regulations with regard to DLP take of predators.

Permittee may not interfere with legal hunting, fishing, trapping, or other use of the land

Permittee must comply with State and Federal laws on livestock quarantine and sanitation.

Estimated Carrying capacity for 180-day grazing season on winter range within the proposed allotment:

Ecological Site	Acres	Estimated Ac/Animal	Estimated Reindeer/Sea	Stocking Potent.
Shrub-lichen upland	16,629	32.1	104	52
Lichen Meadow	27,157	6.7	811	405
Lichen sedge mead.	43,375	9.1	953	477
Lichen uplands	20,192	7.2	561	281
Lichen ridge	5,729	25.0	46	23
Lichen sedge tundra >3,500 lbs/acre	90,103	8.5	2,120	1060
Lichen sedge tundra <3,500 lbs. acre	109,577	18.3	1,197	599
TOTALS	312,762		5,792	2,897

Stocking potential = Estimated reindeer per season x .50 to provide for safety cushion because of extreme conditions.

We incorporate by reference the Saperstein report. Calculations are included in Appendix 7 of this report. The proposed stocking rate is 26% of the estimated carrying capacity of Service-owned lands in this proposed grazing area. The lower levels will insure that this proposed use will not materially detract from Refuge resources.